

**BEFORE THE PUBLIC UTILITY COMMISSION
OF OREGON
UM 1415**

In the Matter of the
PUBLIC UTILITY COMMISSION OF OREGON
Staff Investigation into Cost Methods for Use in
Developing Electric Rate Spreads.

STAFF'S OPENING COMMENTS ON
THE DRAFT STRAW PROPOSAL

General Discussion

Staff prepared the following in response to the Commission's request for further discussion in Docket No. UM 1415. Specifically requested are comments by parties regarding factors to be considered "when evaluating whether or not to approve a proposed mandatory time-varying rate."

The factors presented in the straw proposal are consistent with a number of the Bonbright principles, which are listed below:¹

1. Provide adequate revenue recovery
2. Promote fairness in cost allocation
3. Promote efficient resource use
4. Practical to implement
5. Easy to interpret
6. Provide revenue stability for utility
7. Provide bill stability for customers
8. Avoid undue discrimination among customers
9. Reflect all costs in the provision of electricity
10. Dynamic efficiency in promoting innovation and responding to demand-supply imbalances

While meeting load requirements in a least cost manner is a critical regulatory objective, a parallel long-standing position held by this and many other regulatory commissions is that electric utility rates should reflect costs.² The principle of cost-based rates aligns with well-established concepts of economic efficiency³ and social equity,⁴ with the latter expressed by the above-listed second Bonbright principle.⁵

¹ See "Rethinking Rate Design, DRRC Dynamic Pricing Issues Workshop"; The Brattle Group Presentation to the California Public Utilities Commission; September 7, 2007. See also "Principles of Public Utility Rate Regulation"; second edition; Bonbright, *et al*; 1988; pages 382 through 384.

² Staff holds as an ideal that prices on the margin reflect marginal costs, while generating customer class revenues based upon average costs. "Rate spread" denotes the final step of apportioning the entire utility revenue requirement among the customer classes or schedules. Cost-of-service analyses inform the rate spread process.

³ Prices lower than costs may result in excess usage, requiring utility investments and/or other expenditures where costs exceed the value of utility services delivered to customers. Prices higher than costs may result in foregone usage and less than socially optimal levels of delivered services, insofar as the costs are below the value of services otherwise delivered to the customer.

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- For prices to foster economic efficiency requires adaptive behavior by customers—in the form of more or less consumption of the utility service, or through an altered demand for utility service substitutes or complements.
 - Considerable inertia is often manifested in customers' responsiveness to utility price signals.
- Achieving greater social equity in the context of utility rate design is independent of any behavioral modifications on the part of customers in response to prices.
- “Just and reasonable” rate-making considerations such as administrative ease, etc. may argue against “cost-based-rates-purity” for a particular application.⁶

The discussion in the instant Order—and specifically the Factors and Directives—appears to be targeted towards using rate design for purposes of economizing on future resources. For purposes of considering rate design as a demand-side resource, it makes sense for the mandatory time-varying rate proposals to be analyzed in the context of the Integrated Resource Plan (IRP). This allows for a consistent review of all resource alternatives for meeting projected future loads.

As reflected in the Bonbright principles, there are other uses of rate design—notably including the promotion of fairness, in the sense that rates should reflect costs so that those customers that cause

⁴ The National Academy of Public Administration developed the following definition of “social equity”: “The fair, just and equitable management of all institutions serving the public directly or by contract; the fair, just and equitable distribution of public services and implementation of public policy; and the commitment to promote fairness, justice, and equity in the formation of public policy.” See at <http://www.napawash.org/fellows/standing-panels/standing-panel-on-social-equity-in-governance/>.

Staff employs the terms “social equity” and “fairness” interchangeably. In our view they are fostered when some subset(s) of customers does not subsidize some other subset through the mechanism of electric utility service rates. If “society” chooses to subsidize a particular customer or group of customers, the preferred approach is through taxes and transfer payments, with a generalized orientation towards income redistribution from those having higher taxable incomes to those with lower taxable incomes. Limiting the use of electric service rates for redistribution reduces subsidization of some low-income customers by other low-income customers who are, for various and sometimes unavoidable reasons, high-utility-use, large-bill customers.

⁶ It is clear from the list of Bonbright principles that recognized rate design considerations go beyond straightforward efficiency, equity, and direct cost causation. Staff would add to Bonbright’s list the following ancillary considerations:

- a. Avoiding rate shock: There is little that regulation can do to mitigate rate shock when rates increase by a large amount due to a general rate increase. When, under the auspices of rate design reform, some rates are increased so that others can be decreased, a phasing-in of changes over time can minimize customer objections owing to selective rate shock.
- b. “Social justice”: Regulators should exercise care regarding actions that would tend to redistribute income from the relatively less well-off or the disadvantaged to those in more favorable circumstances.

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more costs will also pay relatively more. When a mandatory time-varying rate is being considered in the context of fairness, such a rate proposal should appropriately be considered during the utility's general rate filing. Application of any new rate should face specific and rigorous scrutiny under the auspices of a general rate case and its development of an evidentiary record. Nevertheless, if the merit of a time-varying rate is primarily the cost savings and reduction in load, then such rate proposal should definitely be vetted within an IRP.

Even if it were shown that adoption of seasonal rates would not change consumer usage (in other words, consumers have a price elasticity of demand equal to zero), Staff would still support adoption of seasonal rates based on equity considerations—assuming there were significant differences in the seasonal cost of providing electricity, and the other Bonbright principles were met overall. Accordingly, Staff recommends that any mandatory time-varying rate proposal not be excluded from consideration based on the lack of prior introduction in an IRP.

To reiterate, time-varying rates based on time-varying costs promote social equity by mitigating the extent to which customers having relatively high use of electricity during lower-cost periods subsidize the usage of customers having relatively high use in the higher-cost periods.⁷ Staff does not support the proposition that policies imposing mandatory time-varying rates should be implemented only if they are shown to significantly impact loads. When Staff recently advocated for mandatory time-varying rates, it was where the implementation costs would have been no more than incidental.⁸

Finally, Staff would point out that since the responsiveness of customers to price signals has been found to vary somewhat by class of customer, perhaps the Commission's proposed factors such as F-3, F-5, and F-6 should be identified separately by class of customer.⁹

⁷ Staff was mindful of this principle when advocating summer-seasonal rates for Idaho Power's Oregon residential customers in Docket No. UE 213. Staff assumes a high correlation of natural-gas-heating, central-air-conditioned customers with higher income customers and of swamp-cooling, electric-resistance-heating customers with lower income customers.

⁸ Staff has previously advocated in favor of seasonal rates for all customers. Idaho Power and PacifiCorp already have universal seasonal rates in other states; no special meters are required, and required billing system adaptations for seasonal rates are minimal. Staff has advocated mandatory diurnal time-of-use rates only in those cases where customers' high usage already entails meters that accommodate such rates. PGE's residential critical peak pricing pilot capitalizes upon the sunk costs of the interval recording functionality of the already deployed "smart meters."

⁹ Most price elasticity studies of which Staff is aware have fairly inelastic price elasticities of demand, i.e., the quantity demanded is not very responsive to price changes. Staff intends to conduct studies to estimate price elasticity of demand to help discern the potential for using price as a demand management tool.

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Rate Spread and Rate Design

When considering social equity and cross-subsidization, there is an important distinction between rate spread and rate design. It is not unusual for a utility to incorporate the time variation of costs in its rate spread but not in its rate design, or vice versa. Equity is fostered with recognition of the time variation of costs in *both* rate spread and rate design.

- The cost-of-service and rate spread process can limit *inter*-class cross-subsidization by incorporating the fact that different customer classes impose different cost burdens upon the utility based upon the timing of their loads relative to those times when capacity is being stressed and/or when utility operating costs and competitive market prices are relatively high.
 - Idaho Power's and PGE's cost allocation models are particularly sensitive to the timing of customer classes' loads in determining target revenue requirements on a customer class basis. Except for its Oregon residential class, all of Idaho Power's customer classes—in both its Idaho and Oregon jurisdictions—are on seasonal rates. Rates seasonality with PGE only appears with its optional time-of-day rate schedules.
- *Intra*-class cross-subsidization, including the subsidization of usage during high-cost periods by over-priced usage in low-cost periods, is limited *for a given customer class* by adopting time-varying rates for that class.
 - Again, seasonality in rate spread and rate design can be independent of each other. An example of this is PacifiCorp's Utah service territory, which has seasonal rate design but not seasonally-based cost-of-service and the resultant inter-class rate-spread.

The Pacific Northwest, with its large hydroelectric load-following generating capability, did not have material time-of-day cost differences in the relatively recent past. Seasonal cost differences were also muted to a large extent. However, with constraints imposed over time on the flexibility of the hydroelectric system, and with greater loads and resources added to the Pacific Northwest electric power system, seasonal cost differences appear to have emerged in our region. The Commission's proposed directive to the utilities to provide “detailed information on the cost of serving Oregon customers *during different time periods within the year...*[emphasis added]” should inform parties' perspectives on and understandings of this element of rate design.

Because the time-varying nature of costs may differ among utilities, a rate structure appropriate for one utility may be quite different from that appropriate for another.

- Different levels of implementation costs may also lead to different rate structures among utilities, even though they have identical time-varying cost structures.

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Staff Conditionally Suggests an Additional Factor and Suggests an Additional Utility Directive and the Clarification of a Proposed Utility Directive

If the Commission declines to consider mandatory time-varying rate designs outside the context of an IRP, then the following factor should be added:

- F-8. The level to which fairness and equity between customers would be improved through a time-varying rate.

Staff believes the following should be added to the list of proposed Commission directives to the utilities:

- D-4. The utility will identify and discuss in the IRP the metering and billing capabilities vis-à-vis time-varying rates it already possesses. In the absence of one or more requisite capabilities, the utility will identify and discuss these capabilities, and include the estimated incremental rate base and annual revenue requirement for implementing the various time-varying rates alternatives, including seasonal rates.
 - This information will be essential in the “evaluation of the costs and benefits of the rate structures” noted in D-2.

Factor F-4 is somewhat confusing by its inclusion of an opt-out provision in the general context of a *mandatory* time-varying rates discussion. These Staff comments are consistent in limiting their focus to *mandatory* time-varying rates, be they seasonal or of a time-of-day nature. We expect that the Workshop will provide clarity regarding the appropriate limitations on making certain rates mandatory.

A Discussion of Two Principal Time-Varying Rate Designs: Seasonal Rates and Time-of-Use Rates

Seasonal Rates

Because of a frequently pronounced nature of seasonal cost differences,¹⁰ their negligible level of incremental administrative/implementation cost (including metering and billing), and their simplicity and ease of customer comprehension, seasonal rates are understandably the most widely adopted form of time-varying rate designs.

¹⁰ An example: In the most recent PacifiCorp IRP, the single largest (by megawatts) incremental resource, front-office transactions, is dedicated entirely to meeting third quarter (July – September) heavy-load-hour demands. The remaining resources suffice to accommodate loads throughout the balance of the year.

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- In the interest of rate simplicity, it is not unusual for a utility to employ only two seasons (e.g., summer and non-summer) when actual cost differentials would validate the use of three seasons: summer, winter, and spring/fall.

In terms of desired outcomes, critical peak pricing and standard time-of-use pricing bear some similarity with dispatchable DSM-1 in the sense that, along with load suppression, they typically result in shifting loads to lower-cost periods.¹¹ Seasonal rates are more comparable in their outcome to conservation-based DSM-2 in that higher seasonal rates may suppress seasonal consumption in the short-run and promote space-conditioning-related conservation inducing investments in the long-run.¹²

- The comparative downside to conventional DSM-2 programs per se is that they involve income transfers whereas seasonal rates do not (in the sense that their central purpose is to *avoid* intra-class subsidizing of loads during the high-cost season(s)). Oregon's three percent ETO surcharge is paid by ratepayers at all income levels, but lower-income ratepayers are assumed by Staff to be much less likely to have the ability to pay for the unsubsidized portion of conservation investments such as heat pumps, windows upgrades, or insulation augmentation.

Concerns regarding the bill impacts associated with implementation of seasonal rates, including those with regard to vulnerable populations, might be ameliorated with recognition that increased bills/rates for some season(s) will be at least partially offset, and potentially exceeded by, reduced bills/rates in other seasons.¹³

Staff understands that customers cannot shift loads from one season to another. If rate shock is a concern,¹⁴ it can be mitigated by phasing in the amount of the seasonal differential(s) over several

¹¹ DSM-1: Utility-dispatchable load management (e.g., utility-controlled air-conditioning on-off cycling).

DSM-2: Utility loads reduced due to conservation measures (e.g., installing double-pane windows) that are customer-initiated but may be partially funded by the utility or through one or more government agencies; e.g., incentives from the Energy Trust of Oregon [ETO] and the Federal tax code.

DSM-3: Utility loads reduced or shifted due to customers' response to price signals; e.g., diurnal time-of-use pricing.

¹² Rather than incenting investment, a motivation for residential summer-seasonal rates in the case of Idaho Power is to encourage customers to *not* invest in expensive refrigerated air conditioning, but to continue use of the less expensive and more efficient evaporative cooling that is suitable for low-humidity regions.

¹³ Seasonal rates are designed to be revenue neutral; i.e., to produce the same revenue that would be produced by rates that are uniform throughout the year.

¹⁴ The *summer* impact of the proposed seasonal tail-block rate versus a tail-block rate uniform throughout the year for a 1,300 kWh per average month residential customer under Idaho Power's current application would only be \$2.30 per month. (Idaho Power is now proposing a 22 percent average rate increase for residential

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years. In addition, equal-pay billing options enable customers to levelize their bills over the course of the year.

In this seasonal rates context, Staff supports the Commission's objectives in this docket to establish factors to review for *mandatory* time-varying rates. Staff is not aware of any instance in the country where customers can opt-out of the seasonal rate design that is the standard for their class.

- Equity concerns that may be raised regarding customers and their ability to respond to seasonal rates can be addressed by a consideration of targeted support mechanisms.

Time-of-Use (TOU) Rates

TOU rates require interval recording meters¹⁵ in order to bill the customer's usage as it occurs in the various daily and hourly rating periods (typically peak, off-peak, and shoulder or mid-peak).

- All three Oregon PUC-regulated electric utilities employ TOU meters and TOU rates for their largest customers; only PGE has deployed TOU meters across all of its customer classes.

Critical peak pricing (CPP) overlays a super-peak rate onto a conventional TOU schedule.¹⁶ The super-peak rates are only invoked for a limited number of hours in the year and periods in which they are invoked follow a day-ahead warning to customers.

- Because the load reduction impact of CPP is so much greater than with simple TOU,¹⁷ and because the post-TOU incremental implementation costs can be low,¹⁸ Staff believes a CPP overlay should be the norm if and when TOU-style rates are introduced or updated.

The current or proposed rate differentials for the three regulated electric utilities' large customers are almost inconsequential.¹⁹ Substituting conventional CPP schedules having a substantial super-peak/off-

customers, which will result in a monthly bill of \$115 on a per-customer annual average, or \$126.87 in the summer months, for a customer with monthly usage of 1,300 kWh.)

¹⁵ Henceforth such meters will simply be referred to as TOU meters.

¹⁶ The critical peak rate may be as much as five (or more) times the average rate and several times the on-peak rate.

¹⁷ For residential customers there is a 13 percent average load reduction on a critical peak day with CPP versus four percent for TOU without CP. *See* the Statewide Pricing Pilot Summer 2003 Impact Analysis, Charles Rivers Associates, August 9, 2004, Table 1-3, 1-4, as reported by the Berkeley Lab's Demand Response Research Center, August 2, 2006.

¹⁸ All that is required is for the billing capability to accommodate four different energy prices in a given season rather than three. By combining as off-peak the TOU off-peak and shoulder periods, CPP can be implemented with just three rates: critical peak, on-peak, and off-peak. (PacifiCorp has just two rates, on-peak and off-peak, in its Utah jurisdiction's large industrial TOU schedule (No. 9).)

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peak rate differential for the existing TOU schedules would, based on extrapolating the documented residential customer behavior to that of large customers, likely produce a substantial demand-side management response.

Information from the Draft Straw Proposal Factors identified in this Order should shed light on whether to adopt meaningful, mandatory TOU/CPP pricing for all commercial and industrial customers who possess TOU meters. Where time-varying rates can be justified (on the basis of the Bonbright principles, etc.) for a particular customer class, Staff suggests they be mandatory rather than optional for that class of customers.²⁰

- A note regarding the potential for customer opposition to mandatory TOU rates: A partial explanation as to why resistance by PacifiCorp's large industrial customers in Utah was undetectable²¹ is that the *summer* on-peak period was limited to eight hours during the day, with the off-peak rate applying to the remaining 16 hours. This contrasts with the sixteen-hour "peak" period and eight-hour off-peak period for PGE's customers and PacifiCorp's Oregon customers. In the interest both of shifting loads off of the expected (i.e., mid-afternoon) system summer demand peak and mitigating hardships due to rate design, it is obviously much easier for customers to shift usage away from an eight-hour on-peak rating period than it is to shift usage from a sixteen-hour "on-peak" period.

Dated at Salem, Oregon, this 8th day of September 2011.



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¹⁹ Examples: The on-peak/off-peak energy rate differential proposed for Idaho Power's Schedule 9 is less than one-half a cent per kWh. By contrast, the differential in PacifiCorp's current Utah Schedule 9 is 1.3 cents per kWh.

²⁰ With ratepayers having made the costly investment in TOU meters, they should be able to reap the efficiency and equity benefits of TOU rates.

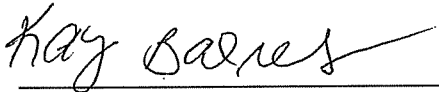
²¹ ...at least by George Compton, who was on the staff of the Utah Division of Public Utilities when mandatory TOU rates were implemented for PacifiCorp's large industrial customers.

CERTIFICATE OF SERVICE

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I certify that I have, this day, served the foregoing document upon all parties of record in this proceeding by delivering a copy in person or by mailing a copy properly addressed with first class postage prepaid, or by electronic mail pursuant to OAR 860-001-0180, to the following parties or attorneys of parties.

Dated this 8th day of September, 2011 at Salem, Oregon



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